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CONTOUR PULL SCRAPER WITH STOWABLE FILE

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# CONTOUR PULL SCRAPER WITH STOWABLE FILE

## BACKGROUND OF THE INVENTION

### FIELD OF THE INVENTION

5           This invention relates to scrapers. Specifically this invention relates to contour scrapers. In another respect this invention relates to contour scrapers as combination tools.

## BACKGROUND AND DISCUSSION OF THE PRIOR ART

10           Contour scrapers are used to scrape surfaces such as moldings and the like. Prior art contour scrapers had elongated handles and often had an elongated metal shank, which handle and shank were generally coaxially disposed. Such prior art contour scrapers are shown in FIGS. 1-8. These prior  
15 art contour scrapers caused fatigue in repetitive use. Further such prior art contour scrapers provided at best limited clearance and often interference with rubbing of the user's knuckles when the blade edge was disposed at an acute angle with respect to the work surface.

20           The contour scraper art desired a construction which avoided such interference and yet provided fine operational control in the blade angle to work

surface, particularly where the blade was disposed at an acute angle with respect to the work surface. The contour scraper art also desired a scraper which reduced fatigue with repetitive use.

The contour scraper blades required constant resharpener or filing of the blade edge. This necessitated access to a file. The user would often have to cease scraping and locate a suitable file for the blade in use.

The early patent U.S. 822,928 granted in 1906 to Delano, disclosed a file which was stored in the scraper handle. The file was only accessible by removal of a plug at the proximate of end of the handle. A compression spring was disposed within the handle so that with removal of the plug the spring would force the file out the proximate end. If the plug was lost or misplaced, the stowable file feature was rendered inoperable as the file would be forced out of the handle and fall out of the handle in use particularly in the upward vertical disposition.

The contour scraper art desired a scraper which eliminated the before-described file access impediments.

The prior art scrapers generally required disassembly or screw removal for blade replacement. Such disassembly or screw removal created the opportunity for lost or misplaced parts or elements rendering the scraper inoperable. The contour scraper art desired improved blade removal and replacement.

The present invention provides solutions to the prior art interference, blade

removal and file access impediments.

## SUMMARY OF THE INVENTION

5 The contour scraper of the present invention has a handle with specifically contoured grip surfaces and a distally angularly disposed blade receiving surface. The handle has an elongated arcuate axis, an upper proximately downwardly disposed curved surface, and a lower curved surface formed with two elongated curved finger receiving recesses. The handle has outwardly extending sides which are flared outwardly towards the proximate end. The blade receiving surface is distally angularly disposed, and in substantial part disposed below the upper grip surface. The blade receiving surface is formed with means to detachably operably receive one of a plurality of interchangeable double-edged blades.

10 The double-edged blade receiving surface is formed with a cylindrical post and a spatially disposed locking screw. The double-edged blade is formed with a keyhole opening which has opposed part circular edges and a contiguous central part circular enlarged opening. The central opening is larger than the locking screw head. The post engages one opposed part circular edge, and the screw engages the other opposed part circular edge. When the screw is loosened, but not necessarily removed, the blade is reversed or removed and replaced.

20 The handle is provided with a proximate end slotted recess. A file is

slidably received and stowed in the recess. A permanent rare earth metal magnet is fixedly disposed in the handle at the recess end wall. The magnet is a rare earth metal magnet thereby being of sufficient magnetic force to magnetically hold the file in the handle during scraping operations. The handle has an enlarged vertically disposed through hole adjacent its proximate end, whereby the user is able to access the file through the vertically disposed hole to remove the file through the proximate end slot.

The handle has a hard thermoplastic core and an elastomeric molded over soft grip cover for added comfort in repetitive scraping operations.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of one prior art scraper;

FIG. 2 is a distal end view of the scraper of FIG. 1;

FIG. 3 is a side elevational view of a second prior art scraper;

5 FIG. 4 is a distal end view of the scraper of FIG. 3;

FIG. 5 is a side elevational view of a third prior art scraper;

FIG. 6 is a distal end view of the scraper of FIG. 7;

FIG. 7 is a side elevational view of a fourth prior art scraper with a second blade  
in broken line view to show a replacement blade;

10 FIG. 8 is a distal end view of the scraper of FIG. 7;

FIG. 9 is a perspective view of the scraper of the present invention;

FIG. 10 is a side elevational view of the scraper of FIG. 9;

FIG. 11 is a top plan view of the scraper as shown in FIG. 9;

FIG. 12 is an distal end view of the scraper in FIG. 10;

15 FIG. 13 is a sectional view taken along line 13-13 of FIG. 11;

FIG. 14 is a top plan view of the file removed from the scraper of FIG. 10;

FIG. 15 is a side edge view of the file FIG. 14;

FIG. 16 is a side view of the scraper of FIG. 10 in use in an acute blade angle for  
scraping operation;

20 FIG. 17 is a side view to the scraper of FIG. 10 in use in a less acute blade angle  
scraping operation than in FIG. 16;

FIG. 18 is an enlarged sectional view taken along line 18-18 of FIG. 14; and  
FIG. 19 is an enlarged sectional view taken along line 19-19 of FIG. 14.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 9-19, there is shown scraper 10 of the present  
invention. Scraper 10 in general includes an elongated specifically contoured  
handle 11 and a two-way or double-edged detachable blade 12. Blade 12 is  
formed with oppositely disposed differently configured blades 12a and 12b and a  
central enlarged hole 12c with opposed part-circular edges 12d (FIG. 12).

Handle 11 has an elongated arcuate or curved longitudinal axis A. (FIG.  
10) Handle 11 extends from distal end 13 to proximate end 14. Handle 11 has  
an upper curved surface 15 which has a steep downwardly disposed curved  
surface 16 towards distal end 13, which is in marked contrast to a very shallow  
downwardly curved surface 17 at the proximate end 14. Handle 11 has a lower  
surface 18 which is formed with a distally disposed concave curved surface 19  
and a proximally disposed concave curved surface 20. A depending tapered  
protrusion 21 is disposed between and contiguous with respective surfaces 19  
and 20 (FIG. 10). Handle 11 has oppositely disposed elongated sides 22 and  
23 which are flared outwardly towards proximate end 14 (FIG. 11).

Handle proximate end 14 has an arcuate curved end 24 and rounded  
edges 25 and 26 which are contiguous with respective sides 22 and 23. A hole  
or slot 29 is formed in end 24 and extends distally to provide recess or cavity 38,

for purposes hereinafter appearing (FIG. 13).

A vertically disposed enlarged opening or through hole 30 extends from handle upper surface 15 to handle lower surface 18 adjacent proximate end 14. Hole 30 is contoured as at 31 adjacent upper surface 15 and at 32 adjacent lower surface 18. Hole 30 is contoured and sized to permit the user's fingers to readily access the hole for the purpose of engaging file 40 to remove the file from the handle.

Recess or cavity 38 extends from end slot 29 to end wall 36. A permanent rare earth metal magnet 35 is fixedly disposed in handle 11 at recess end wall 36. Ferro-metallic file 40 is slidably received through slot 29 and slidably removably disposed in cavity 38. A through hole 43 is formed in file 40. With file 40 fully disposed in recess 38, file 40 contacts magnet 35 and is magnetically held in place. File 40 is accessible through handle hole 30. Scraper 10 can be hook mounted through holes 30 and 43 when not in use. File 40 has a half-round surface for filing concave blade edge (FIG. 9) and a flat file surface for filing straight and convex blade edges, (e.g. FIG. 12).

Handle distal end 13 has a distally downwardly angularly disposed rectangular blade mounting surface 44. Centering pin 45 is integrally formed with and extends upwardly from surface 44. Locking screw 46 is operably disposed in metal insert 55 and disposed adjacent lower edge 42 of surface 44. In this manner of construction, reversible blade 12 is mounted through hole 12c.



Hole 12c is formed with opposed part circular edges or portions 12d for respectively alternatively contactingly engaging centering pin 45 and locking screw 46 (FIGS. 12 and 13). Locking screw 46 is locked to hold blade 12 in place, with one blade edge 12a operably disposed beyond handle lower edge 42.

In one aspect, the present invention is a two-way reversible blade and handle mounting construction wherein the blade 12 may be removed or reversed without removing the locking screw 46 or any other element. Post 45 and juxtaposed locking screw 46 in combination with the blade opening 12c and opposed curved edges or portions 12d provide quick blade change and quick blade removal without the need to remove screw 46. In this regard, the center diameter of hole portion 12c is larger than screw 46 head. This quick change and quick reversible action without element removal is an improvement over the prior art construction wherein the screw had to be removed or handle disassembled to change blades.

It is within the contemplation of the present invention to provide a plurality of double-edged blades 12, wherein each blade edge e.g. 12a, 12b is differently contoured to provide differently contoured (e.g. concave, convex and straight) scraping edges for differently contoured work surfaces, particularly including moldings.

Handle 11 has a hard thermoplastic core 51 and a relatively soft

integrally molded over elastomeric cover 53. The thermoplastic core and elastomeric cover molding operations are well known in the screwdriver and knife handle art.

Magnet 35 is preferably a rare earth metal magnet and preferably neodymium. The magnet should have a magnetic strength or energy product of at least about  $6.0 \times 10^6$  gauss-oersteds. This high strength magnet holds the magnet in place without the need for a plug or other mechanical retainer. The high magnetic strength pulls the file back into its recessed position even if slightly disposed away from the magnet. Such rare earth metal magnets are commercially available, for example, from Hitachi Magnet Corporation, Division of Hitachi Metals International, Ltd., under the style designations Hicorex 90A, 90B, 96A, 96B, 99A, and 99B.

Referring to FIGS. 16 and 17 there is, respectively, shown the present contour scraper in a shallow or particularly acute angle scraping operation and in a less acute angle scraping. It is important to note that in the acute angle B scraping operation, the user's knuckles do not contact workpiece surface 49 as there is clearance 50 provided between the user's knuckles and the workpiece surface 49 (FIG. 16). In the less acute C angle scraping operation (FIG. 17), the user's hand is of course disposed further away from the workpiece surface. There is thus shown and described the scraper construction of the present invention which provides a broad range of controlled and improved comfort

scraping actions.

While the foregoing describes one embodiment of the invention, it is understood that various modifications may be made within the scope of the invention as defined in the adjoined claims.